

**State of California**  
**California Regional Water Quality Control Board**  
**Santa Ana Region**  
**3737 Main Street, Suite 500**  
**Riverside, CA 92501- 3348**

**FACT SHEET**

January 29, 2010

**ITEM:       XX**

**SUBJECT:   Waste Discharge Requirements for the San Bernardino County Flood Control District (SBCFCD), the County of San Bernardino, and the Incorporated Cities of San Bernardino County within the Santa Ana Region, Area-wide Urban Storm Water Runoff Management Program, San Bernardino County, Order No. R8-2010-0036 (NPDES No. CAS618036)**

**I.       INTRODUCTION**

The 1972 Clean Water Act (CWA) established the National Pollutant Discharge Elimination System (NPDES) permit program to regulate the discharge of pollutants from point sources to waters of the United States (U.S.). Since then, considerable strides have been made in reducing conventional forms of pollution, such as from sewage treatment plants and industrial facilities, through the implementation of the NPDES program and other federal, state and local programs. The adverse effects from some of the persistent toxic pollutants (DDT<sup>1</sup>, PCB<sup>2</sup>, TBT<sup>3</sup>) were addressed through manufacturing and use restrictions and through cleanup of contaminated sites. On the other hand, pollution from land runoff (including pollutants from atmospheric deposition, urban, suburban and agricultural sources) was largely unregulated until the 1987 CWA amendments. As a result, diffuse sources, including urban storm water runoff, now contribute a larger portion of many kinds of pollutants than the more thoroughly regulated sewage treatment plants and industrial facilities. The 1987 CWA amendments established a framework for regulating urban storm water runoff. Pursuant to these amendments, the Santa Ana Regional Water Quality Control Board (Regional Board) started regulating municipal storm water runoff in 1990.

It is also critical to manage non-point sources, such as runoff from agricultural sources, in order to effectively prevent or remedy water quality impairment. In 2000, the State Water Resources Control Board and the California Coastal Commission developed a

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<sup>1</sup> DDT: Dichlorodiphenyltrichloroethane

<sup>2</sup> PCB: Polychlorinated biphenyl

<sup>3</sup>TBT: Tributyltin

Non-Point Source Pollution Control Program. This program was approved by the USEPA and NOAA<sup>4</sup> and is being implemented by a number of agencies.

The attached pages contain information concerning an application for renewal of waste discharge requirements and an NPDES permit. Order No. R8-2010-0036, NPDES No. CAS618036, prescribes waste discharge requirements for urban storm water runoff<sup>5</sup> from the cities and the unincorporated areas in San Bernardino County within the jurisdiction of the Regional Board. As defined by 40 CFR 122.26(b)(13), storm water includes storm water runoff, snowmelt runoff, surface runoff and drainage. “Storm water” is defined as urban runoff and snowmelt runoff consisting only of those discharges which originate from precipitation events. Storm water is that portion of precipitation that flows across a surface to the storm drain system or receiving waters.

Urban runoff is defined as all flows in a storm water conveyance system and consists of the following components: (1) storm water (wet weather flows) and (2) non-storm water (authorized under Section V of the Order, dry weather flows).

On October 26, 2006, the San Bernardino County Flood Control District (SBCFCD, the Principal Permittee) and the County of San Bernardino, in cooperation with the cities of Big Bear Lake, Chino, Chino Hills, Colton, Fontana, Grand Terrace, Highland, Loma Linda, Montclair, Ontario, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Upland, and Yucaipa (Co-Permittees, hereinafter collectively referred to as Permittees or Dischargers), submitted a Report of Waste Discharge (ROWD)) for renewal of their area-wide NPDES storm water permit. The permit renewal application was submitted in accordance with the requirements specified in the previous NPDES storm water permit (Order No. R8-2002-0012). The permit application also follows guidance provided by Regional Board and State Water Resources Control Board (State Board) staff, and the United States Environmental Protection Agency (USEPA). Order No. R8-2002-0012 expired on April 27, 2007 and was administratively extended in accordance with 40 CFR Part 122.6 and Title 23, Division 3, Chapter 9, §2235.4 of the California Code of Regulations.

Order No. R8-2010-0036 regulates discharges of stormwater and urban runoff<sup>6</sup> from the upper Santa Ana watershed to waters of the U.S.

## **II. REGULATORY BACKGROUND/CLEAN WATER ACT REQUIREMENTS**

As storm water flows over streets, parking lots, construction sites, and industrial, commercial, residential, and municipal areas, it can mobilize pollutants from these areas and transport them to waters of the U.S. If appropriate pollution control measures are not implemented, urban runoff may contain elevated levels of pathogens (bacteria, viruses, protozoa), sediment, trash, fertilizers (nutrients, mostly nitrogen and phosphorus compounds), oxygen-demanding substances (decaying and/or decomposable matter), pesticides (e.g., DDT, chlordane, diazinon, chlorpyrifos, etc.) heavy metals (cadmium, copper, chromium, lead, zinc, etc.), and petroleum products

<sup>4</sup> NOAA: National Oceanic and Atmospheric Administration

<sup>5</sup> Urban Storm Water Runoff includes authorized non-storm water as per Section V of the Order and storm water runoff, collectively referred to as urban runoff (also see glossary).

<sup>6</sup> For purposes of this Order, urban runoff includes storm water and authorized non-storm water discharges as per Section V of the Order.

(oil & grease, PAHs<sup>7</sup>, petroleum hydrocarbons, etc.). If not properly managed and controlled, urbanization can change the stream hydrology and increase pollutant loading to receiving waters. In general, as a watershed undergoes urbanization, pervious surface area decreases, runoff volume and velocities increase, riparian habitats and wetland habitats decrease, the frequency and severity of flooding may increase, and pollutant loading increases. Most of these impacts are due to human activities that occur during and/or after urbanization. The pollutants and hydrologic changes can cause declines in aquatic resources, cause toxicity to marine organisms, and impact human health and the environment.

If not properly controlled, urban runoff could be a significant source of pollutants in waters of the U.S. Table 1 includes a list of pollutants and their sources, and some of the adverse environmental consequences resulting from urbanization.

The Permittees in San Bernardino County conducted urban runoff monitoring and determined that for a number of constituents (e.g., bacteria, copper, lead, nutrients), urban runoff quality exceeded the Basin Plan objectives, CTR criteria, and/or USEPA's storm water benchmarks. The permit renewal application submitted by the Permittees (2006 ROWD) ranked bacterial contamination as the highest priority urban runoff problem<sup>8</sup> within the permitted area.

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<sup>7</sup> PAHs (Polycyclic aromatic hydrocarbons) – a hydrocarbon containing two or more aromatic rings. PAHs are persistent, bioaccumulative, and toxic pollutant. PAHs occur in oil, coal, and tar deposits, and are produced as byproducts of fuel burning. Sources include industrial processes, transportation, energy production and disposal activities.

<sup>8</sup> 2006 Report of Waste Discharge (ROWD)

**Table 1<sup>9</sup>. Pollutants/Impacts of Urbanization on Waters of the U.S.**

<b>Pollutants</b>	<b>Sources</b>	<b>Effects and Trends</b>
Toxins (e.g., biocides, PCBs, trace metals, heavy metals)	Industrial and municipal wastewaters; runoff from farms, forests, urban areas, and landfills; erosion of contaminated soils and sediments; vessels; atmospheric deposition	Poison and cause disease and reproductive failure; fat-soluble toxins may bioconcentrate, particularly in birds and mammals, and pose human health risks. Inputs into U.S. waters have declined, but remaining inputs and contaminated sediments in urban and industrial areas pose threats to living resources.
Pesticides (DDT, diazinon, chlorpyrifos)	Urban runoff; residential, commercial, industrial, and farm use; agricultural runoff	Legacy pesticides (DDT, chlordane, dieldrin) have been banned; still persists in the environment; some of the other pesticide uses have been curtailed or restricted.
Biostimulants (organic wastes, plant nutrients)	Sewage and industrial wastes; runoff from farms and urban areas; nitrogen from combustion of fossil fuels	Organic wastes overload bottom habitats and deplete oxygen; nutrient inputs stimulate algal blooms (some harmful), which reduce water clarity, cause loss of seagrass and coral reef, and alter food chains supporting fisheries. While organic waste loadings have decreased, nutrient loadings have increased (NRC, 1993a, 2000a).
Petroleum products (oil, grease, petroleum hydrocarbons, PAHs)	Runoff and atmospheric deposition from land activities; shipping and tanker operations; accidental spills; oil gas production activities; natural seepage; PAHs from internal combustion engines	Petroleum hydrocarbons can affect bottom organisms and larvae; spills affect birds, mammals and aquatic life.
Radioactive isotopes	Atmospheric fallout, industrial and military activities	Bioaccumulation may pose human health risks where contamination is heavy.
Sediments	Erosion from farming, construction activities, forestry, mining, development; river diversions; dredging and mining	Reduce water clarity and change bottom habitats; carry toxins and nutrients; clog fish gills and interfere with respiration in aquatic fauna. Sediment delivery by many rivers has decreased, but sedimentation poses problems in some areas.

<sup>9</sup> Adapted from Boesch, D.F., R.H. Burroughs, J.E. Baker, R.P. Mason, C.L. Rowe, and R.L. Siefert. 2001. Marine Pollution in the United States: Significant Accomplishments, Future Challenges. Pew Oceans Commission, Arlington, Virginia.

<b>Pollutants</b>	<b>Sources</b>	<b>Effects and Trends</b>
Plastics and other debris	Boats, ships, fishing nets, containers, trash, urban runoff	Entangles aquatic life or is ingested; degrades beaches, wetlands and nearshore habitats. Floatables (from trash) are an aesthetic nuisance and can be a substrate for algae and insect vectors.
Pathogens (bacteria, protozoa, viruses)	Sewage, urban runoff, livestock, wildlife, and discharges from boats and cruise ships.	Pose health risks to swimmers and consumers of seafood.
Alien species	Ships and ballast water, fishery stocking, aquarists	Displace native species, introduce new diseases; growing worldwide problem (NRC 1996).

The (CWA) prohibits the discharge of any pollutant to navigable waters from a point source unless an NPDES permit authorizes the discharge. The 1987 amendments to the CWA required municipal separate storm sewer systems (MS4s) and industrial facilities, including construction sites, to obtain NPDES permits for storm water runoff from their facilities. On November 16, 1990, the USEPA promulgated the final Phase I storm water regulations. The storm water regulations are contained in 40 CFR Parts 122, 123 and 124.

The areawide NPDES permit for San Bernardino County areas within the Santa Ana Regional Board's jurisdiction is being considered for renewal in accordance with Section 402(p) of the CWA and all requirements applicable to an NPDES permit issued under the issuing authority's discretionary authority. The requirements included in this Order are consistent with the CWA, the federal regulations governing urban storm water discharges, the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan), the CWC, and the State Board's Plans and Policies.

The Basin Plan is the basis for the Regional Board's regulatory programs. The Basin Plan incorporates plans and policies adopted by the State Board by reference. The Basin Plan was developed and is periodically reviewed and updated in accordance with relevant federal and state laws and regulations, including the CWA and the CWC. As required, the Basin Plan designates the beneficial uses of the waters of the Region and specifies water quality objectives intended to protect those uses. (Beneficial uses and water quality objectives, together with an antidegradation policy, comprise federal "water quality standards"). The Basin Plan also specifies an implementation plan, which includes certain discharge prohibitions. In general, the Basin Plan makes no distinctions between wet and dry weather conditions in designating beneficial uses and setting water quality objectives, i.e., the beneficial uses, and correspondingly, the water quality objectives are assumed to apply year-round. (Note: In some cases, beneficial uses for certain surface waters are designated as "I", or intermittent, in recognition of the fact that surface flows (and beneficial uses) may be present only during wet weather.) Most beneficial uses and water quality objectives were established in the

1971, 1975, 1983, and 1995 Basin Plans. The 1995 Basin Plan was updated in February 2008<sup>10</sup>. Amendments to the Basin Plan included new nitrate-nitrogen and total dissolved solids (TDS) objectives for specified management zones and new nitrogen and TDS management strategies applicable to both surface and ground waters and various Total Maximum Daily Loads (TMDLs) and Implementation Plans that had been adopted for several impaired water bodies within the region.

Water Code Section 13241 requires that certain factors must be considered—when water quality objectives are established. These factors include economics and the need for developing housing in the Region. (The latter factor was added to the CWC in 1987).

During the third term permit (R8-2002-0012) development process, the Permittees raised an issue regarding compliance with Section 13241 of the California Water Code with respect to water quality objectives for wet weather conditions, specifically the cost of achieving compliance during wet weather conditions and the need for developing housing within the Region and its impact on urban storm water runoff. In response to this request, Regional Board staff in collaboration with the permittees in the region has organized a Storm Water Quality Standards Task Force (SWQSTF). The SWQSTF is closely monitoring actual and potential beneficial uses of surface waters within the region. Based on the findings, it is likely that the SWQSTF will recommend changes to the current beneficial use designations and water quality objectives specified in the Basin Plan. This Order may be reopened to incorporate any changes to the water quality standards. In the meantime, the provisions of this Order will result in reasonable further progress towards the attainment of the existing water quality objectives, in accordance with the discretion in the permitting authority recognized by the United States Court of Appeals for the Ninth Circuit in *Defenders of Wildlife v Browner*, 191 F.3d 1159, 1164 (9<sup>th</sup> Cir. 1999).

### **III. BENEFICIAL USES**

Storm water flows that are discharged to MS4s within the Santa Ana River Watershed in San Bernardino County are tributary to various water bodies (inland surface streams, lakes and reservoirs) of the state (see Attachment 2 for a list of surface waterbodies within the Permitted area). The beneficial uses of these water bodies include municipal and domestic supply, agricultural supply, industrial service and process supply, groundwater recharge, hydropower generation, water contact recreation, non-contact water recreation, commercial and sportfishing, warm freshwater habitat, cold freshwater habitat, preservation of biological habitats of special significance, wildlife habitat and preservation of rare, threatened or endangered species, spawning, reproduction and development of aquatic habitats and estuarine habitat. The ultimate goal of this Permit and the related urban storm water management program is to protect the beneficial uses of the receiving waters.

### **IV. PERMITTED AREA**

The permitted area is delineated by the Santa Ana-Lahontan Regional Board boundary line on the north and northeast, the Santa Ana-Colorado River Basin Regional Board

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<sup>10</sup> [http://www.waterboards.ca.gov/santaana/water\\_issues/programs/basin\\_plan/index.shtml](http://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/index.shtml)



boundary on the east, the San Bernardino-Riverside County boundary on the south and southeast, the San Bernardino-Orange County boundary on the southwest, and the San Bernardino-Los Angeles County boundary on the west (see Attachment 1). The permittees serve a population of approximately 1.5 million, occupying an area of approximately 620 square miles<sup>11</sup>. For the entire county, the population estimated as of July 1, 2008 is 2.06 million<sup>12</sup>. The latest figures from the San Bernardino County Storm Water Program 2007-2008 Annual Report estimated 378 miles of aboveground channels and 485 miles of underground storm drain channels, for a total of 863 miles in the project area. Approximately seven percent (7%) of the San Bernardino County surface area drains into water bodies within this Regional Board's jurisdiction. Storm water discharges from urbanized areas consist mainly of surface runoff from residential, commercial and industrial developments. In addition, there are storm water discharges from agricultural land uses, including farming and animal feeding operations. However, the CWA specifically excludes discharges composed entirely of return flows from irrigated agriculture and nonpoint source agricultural activities. The concentrated animal feeding operations within the Region are regulated under the Regional Board's General Permit for Dairies, Order No. R8-2007-0001, NPDES No. CAG018001. Areas of the County not addressed or which are excluded under the storm water regulations and areas not under the jurisdiction of the Permittees are excluded from coverage under this permit. These excluded areas and activities include the following:

- Federal lands and state properties, including, but not limited to, military bases, national forests, hospitals, schools, colleges and universities, and highways;
- Native American tribal lands;
- Agricultural lands; and
- Utilities and special districts.

The Regional Board will coordinate with these entities to implement programs that are consistent with the requirements of this Order. The Regional Board, pursuant to 40 CFR 122.26(a), has the discretion and authority to require non-cooperating entities to participate in this Order. The Regional Board may also consider such facilities for coverage under its NPDES permitting scheme pursuant to USEPA Phase II storm water regulations.

To the extent that the Permittees authorize the connection of these discharges into their MS4s, this Order requires the Permittees to provide written notification of WQMP requirements for post-construction BMPs and/or other applicable requirements of this Order. ~~A WQMP approved by the Permittee who owns the MS4 constitutes compliance with the General Construction Permit post-construction requirements<sup>13</sup> for the Permit Area.~~<sup>[c1]</sup>

<sup>11</sup> 2006 Report of waste Discharge.

<sup>12</sup> State of California, Department of Finance, Population Estimates and Components of Change by County, July 1, 2000-2008. Sacramento, California, December 2008

~~<sup>13</sup> The State General Construction Permit Order No. 2009-009-DWQ Section XIII.-~~

## **V. WATERSHED MANAGEMENT/UPPER SANTA ANA RIVER BASIN**

To regulate and control storm water discharges from the San Bernardino County area to the San Bernardino County MS4s, an area-wide approach is expected to be the most effective. The entire storm drain system in San Bernardino County is not controlled by a single entity; San Bernardino County, the SBCFCD, several cities, State Department of Transportation (Caltrans), US Army Corps of Engineers and a number of other entities own, operate, and/or manage the storm drain systems. In addition to the Cities, the County and the SBCFCD, there are a number of significant contributors of urban storm water runoff to these storm drain systems. These include: large institutions, such as State University facilities, schools, hospitals, etc.; federal facilities, such as Department of Defense facilities; State agencies, such as Caltrans; water and wastewater management agencies, such as San Bernardino Valley Municipal Water District and Inland Empire Utilities Agency; the National Forest Service; state parks, and entertainment centers such as Pharaoh's Lost Kingdom Park in Redlands, Fiesta Village Family Fun Park in Colton, and other motorsports facilities scattered throughout the County. The management and control of the entire flood control system cannot be effectively carried out without the cooperation and efforts of all these entities. Also, it would not be effective to issue a separate storm water permit to each of the entities within the permitted area whose land/facilities drain into the county storm drain systems and ultimately to waters of the U. S. The Regional Board has concluded that the best management option for the San Bernardino County area is to issue an area-wide storm water permit. Some of the MS4s in the project area discharge into MS4s controlled by other entities, such as the County of Riverside, the County of Orange, and the County of Los Angeles.

Cooperation and coordination among all the stakeholders are essential for efficient and economical management of the watershed. Regional Board staff will facilitate coordination of monitoring and management programs among the various stakeholders, where necessary.

An integrated watershed management approach for urban runoff is consistent with the Strategic Plan (2008-2012<sup>14</sup>) for the State and Regional Boards and the draft California Water Plan Update<sup>15</sup>. A watershed wide approach is also necessary for implementation of the load and waste load allocations to be developed under the TMDL process. The MS4 permittees and all the affected entities are required to participate in regional or watershed solutions, where appropriate, instead of project-specific and fragmented solutions.

The pollutants in urban runoff originate from multiple sources, and effective control of these pollutants requires a cooperative effort of all the stakeholders and many regulatory agencies. Every stage of urbanization should be considered in developing appropriate urban runoff pollution control methodologies. The program's success depends upon consideration of pollution control techniques during planning, construction and post-construction operations. At each stage, appropriate pollution

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<sup>14</sup> State Water Resources Control Board, Strategic Plan Update, 2008-2012, September 2, 2008

<sup>15</sup> [http://www.waterplan.water.ca.gov/docs/cwpu2009/1208prd/vol2/UrbanRunoff\\_PRD\\_09.pdf](http://www.waterplan.water.ca.gov/docs/cwpu2009/1208prd/vol2/UrbanRunoff_PRD_09.pdf)



prevention measures, proper site design considerations, source control measures, and, if necessary, treatment techniques should be considered. In the 2006 ROWD, the Permittees proposed a watershed approach based on a prioritized risk to beneficial uses.

## **1. SUB-WATERSHEDS AND MAJOR CHALLENGES**

The Santa Ana River Watershed in San Bernardino County can be subdivided into the following sub-watersheds:

### **A. UPPER SANTA ANA RIVER WATERSHED**

The Upper Santa Ana River Watershed includes the upper reaches of the Santa Ana River (Reaches 4, 5 and 6) and its tributaries.

1. Reach 4 of the Santa Ana River: Reach 4 of the Santa Ana River is the portion of the River from Mission Boulevard bridge in Riverside to the San Jacinto fault (Bunker Hill Dike) in San Bernardino. There is perennial flow in this reach of the River, mostly from the upstream discharges of treated municipal wastewater. Much of this reach is also maintained as a flood control facility. This reach of the River is posted to warn against water contact recreation, due to microbial problems. The wastewater discharges from the sewage treatment plants to this reach of the River are tertiary treated and are not expected to be sources of microbial contamination. This reach is identified as an impaired waterbody for pathogens in the 303(d) list, scheduled for TMDL completion in 2019. Lytle Creek and Cajon Creek are tributaries to this reach of the River.

Other water quality problems along this reach of the River include the buildup of total dissolved solids (TDS, dissolved salts or minerals) and nitrogen, largely in nitrate form. The buildup of TDS and nitrates can impact downstream beneficial uses, including groundwater recharge. The buildup of TDS and nitrate is mostly due to agricultural uses, including dairies and the application of fertilizers, municipal and industrial wastewater discharges, and reuse and recycling operations. A complex set of programs and policies are included in the Basin Plan to address this problem, including a water supply plan, a wastewater management plan, and a groundwater management plan. Other elements of the Basin Plan include the non-point source program and the storm water program. The Basin Plan identifies the Statewide General Permits and the MS4 permits as the regulatory tools for storm water management in the Basin. In light of the recently adopted Nitrogen-TDS objectives for certain management zones, this Order requires the Permittees to determine baseline concentration of these constituents in dry weather runoff, if any, from significant outfall locations. The Order also includes effluent limitations for TDS and nitrates under dry weather conditions.

2. Reach 5 of the Santa Ana River: This reach of the River extends from the San Jacinto Fault in San Bernardino to the Seven Oaks Dam. Most of this reach of the River is maintained as a flood control facility and is dry, except during storm flows and operational releases from the dam. Major tributaries to this

reach include San Timoteo Creek, City Creek, Plunge Creek, and Warm Creek. These tributaries are also usually dry, except for the discharge of treated wastewater from Yucaipa Valley Water District to San Timoteo Creek and from the City of Beaumont to Coopers Creek (a tributary to San Timoteo Creek). These wastewater discharges flow for a short distance and percolate into the ground. No major water quality problems have been identified in this stretch of the River or its tributaries.

3. Reach 6 of the Santa Ana River: This reach includes the River upstream of Seven Oaks Dam. Major tributaries include Bear Creek, Forsee Creek, and Rattlesnake Creek. Flows consist mostly of snowmelt and storm water runoff. There are no documented water quality problems in this reach of the river and no listed impairments.

#### **B. CHINO BASIN WATERSHED**

The Chino Basin Watershed covers about 405 square miles and lies largely in the southwestern corner of San Bernardino County, and part of western Riverside County. This permit only covers those portions of the watershed that are within San Bernardino County and under the jurisdiction of this Board. Surface drainage is generally southward, from the San Gabriel Mountains toward the Santa Ana River and Prado Flood Control Basin. Major surface waterbodies in the Chino Basin Watershed include:

- San Antonio Creek
- Chino Creek
- Cucamonga Creek
- Day Creek, and
- Deer Creek

Although it was originally developed as an irrigated agricultural area, and then as dairies, the watershed is more recently being steadily urbanized. The municipalities under this permit in the Chino Basin Watershed include Chino, Chino Hills, Fontana, Montclair, Ontario, Rancho Cucamonga, Rialto, and Upland. The Chino-Corona Agricultural Preserve had the highest concentration of dairy animals in the nation until very recently manure and wastewater from dairy operations contain elevated levels of nutrients, salts, and bacteria. The ground and surface water quality in the area have been adversely impacted by bacteria (surface water), nutrients and salts.

The dairies within the Region are regulated under the General Waste Discharge Requirements for Concentrated Animal Feeding Operations (Dairies and Related Facilities) within the Santa Ana Region (Board's General Dairy Permit), Order No. R8-2007-001, NPDES No. CAG018001. The General Dairy Permit allows discharge of storm water from dairies only for storms exceeding a 24-hour 25-year frequency. Portions of the area lack flood control facilities, and storm runoff from these areas is predominantly carried by flows on and parallel to roadways. The San Bernardino and

Riverside County Flood Control Districts, in cooperation with local municipalities, have coordinated to construct flood control facilities in the area.

On April 19, 2004, construction began on the project known as County Line Channel (also known as Eastvale San Bernardino Line 2-13) sponsored by San Bernardino County Flood Control District, Riverside County Flood Control and Water Conservation District, and the City of Ontario. The three-mile-long concrete-lined drainage channel along the Riverside/San Bernardino county line will intercept runoff ~~and prevent overflow of wastewater retention ponds maintained by neighboring dairies that impact the Santa Ana River Watershed.~~ <sup>[c2]</sup> Overland surface storm flows from the City of Ontario and County of San Bernardino portions of the watershed is typically collected by roadways and the flows are discharged into the Cucamonga Creek Channel. The project design enables storm water to be captured and channeled into an existing facility with the capacity to contain the 100-year flow and will accommodate major storm drain laterals in the future to prevent commingling of urban runoff with agricultural drainage. In addition to these benefits, the project prevents the degradation of recharged groundwater upstream of the Chino-Corona Preserve. This project has been completed.

To comply with the recently established nitrogen/TDS objectives, groundwater problems (mostly TDS and nitrate) in the Chino Basin Watershed are being addressed through a comprehensive watershed management plan. As part of this plan, desalters are being built to increase the salt removal from the groundwater through a pump and treat system for contaminated groundwater in the southern part of Chino Basin. One desalter (Chino I Desalter) has been operational since August 2000, and a second one, known as the Chino I Expansion/Chino II Desalter Project, was completed in the spring of 2006.

(Also see discussions below regarding TMDLs for the Middle Santa Ana River watershed.)

### **C. BIG BEAR LAKE WATERSHED**

The Big Bear Lake watershed is located in the San Bernardino Mountains. Major waterbodies in this watershed include:

- Big Bear Lake
- Baldwin Lake (currently a dry lakebed)
- Stanfield Marsh
- Shay Meadows
- Rathbone (Rathbun) Creek
- Summit Creek
- Grout Creek
- Knickerbocker Creek

Big Bear Lake is a high mountain reservoir occupying a relatively small, east-to-west oriented basin. The basin supports a large number of recreational activities. Lake recreational activities include fishing, swimming, boating and water skiing. Areas adjacent to the lake are used for camping, skiing, hiking, equestrian trails and other outdoor activities. Water in the lake is also used for municipal supplies. A number of water quality problems have been identified for the lake.

The 2006 303(d) list of impaired water bodies (see below) designated the following waterbodies in this sub-watershed as impaired: Big Bear Lake (nutrients, copper and mercury); Grout Creek (metals and nutrients); Knickerbocker Creek (metals and pathogens); Summit Creek (nutrients); and Rathbone Creek (nutrients and siltation). The problem pollutants have been identified by the Regional Board as coming from resource extraction activities, urban runoff, snow skiing facilities, construction and land developments, and non-point sources. In conjunction with local stakeholders, the Big Bear Lake Nutrient TMDL for Dry Hydrologic Conditions has been developed and is being implemented. For other pollutants, work is underway to develop TMDLs.

## **2. CWA SECTION 303(d) LIST AND TMDLS:**

The 2006 water quality assessment conducted by the Regional Board<sup>16</sup> identified a number of waterbodies within the Region as impaired waterbodies, under Section 303(d) of the CWA<sup>17</sup>. These are waterbodies where the designated beneficial uses are not met and the water quality objectives are being exceeded. These waterbodies were placed on the CWA Section 303(d) list of impaired waters. The impaired waterbodies in San Bernardino County within the Santa Ana Regional Board's jurisdiction are listed in Table 2.

Federal regulations require that a total maximum daily load (TMDL) be established for each 303(d) listed waterbody for each of the pollutants causing impairment. The TMDL is the total amount of the problem pollutant that can be discharged while water quality standards in the receiving water are attained, i.e., water quality objectives are met and the beneficial uses are protected. It is the sum of the individual wasteload allocations (WLA) for point sources, load allocations (LA) for non-point sources and natural background sources, with a margin of safety. The TMDLs are the basis for limitations established in waste discharge requirements.

This Order incorporates TMDLs that have been adopted for bacterial indicators in the Middle Santa Ana River Watershed and nutrients (phosphorus) for dry hydrological conditions in Big Bear Lake. On August 26, 2005, the Regional Board adopted Resolution No. R8-2005-001 amending the Basin Plan to incorporate Bacterial Indicator TMDLs for Middle Santa Ana River Watershed Waterbodies. On April 21,

<sup>16</sup> On April 24, 2009, the Regional Board adopted an Integrated List of Impaired Waters Under Clean Water Act Sections 305(b) and 303(d), Resolution No. R8-2009-0032.

<sup>17</sup> 2006 CWA Section 303(d) list of water quality limited segments ([http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/docs/303dlists2006/epa/r8\\_06\\_303d\\_req\\_tmdls.pdf](http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r8_06_303d_req_tmdls.pdf))

2006, the Regional Board adopted Resolution No. R8-2006-0023 amending the Basin Plan to incorporate a Nutrient TMDL for Dry Hydrological Conditions for Big Bear Lake. A Mercury TMDL for Big Bear Lake is currently under development, and TMDLs are scheduled for development for all pollutants identified in Table 2. The stakeholders in this watershed are collaborating in the development and implementation of the TMDLs.

Federal regulations (40 CFR 122.44(d)(vii)(B)) require that the NPDES permits be consistent with the applicable wasteload allocations in the TMDLs. This Order requires the Permittees to implement BMPs designed <sup>[c3]</sup> to reduce pollutants to achieve applicable wasteload allocations by the compliance dates in the approved TMDLs.

~~For 303(d) listed waterbodies without a TMDL, the Permittees are required to development and implement a Watershed Action Plan requiring effective post-construction BMPs, enhanced training programs, and targeted public outreach that would address the pollutants of concern.~~ <sup>[c4]</sup>

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**Table 2**  
**CLEAN WATER ACT SECTION 303(D) LISTED WATERBODIES & TMDL SCHEDULE<sup>18</sup>**

Waterbody	Hydro Unit	Size Affected	Pollutant Stressor	Source	Priority	TMDL Schedule	Permittees
Big Bear Lake	801.710	2970 acres 2970 acres 2970 acres 2970 acres 2970 acres 2970 acres 2970 acres	Copper Mercury <sup>19</sup> Metals Noxious aquatic plants Nutrients Sedimentation/Siltation <sup>20</sup> PCBs (Polychlorinated biphenyls)	Resource Extraction Resource Extraction <sup>21</sup> Resource Extraction Construction/Land development Construction/Land development Snow Skiing Activities Construction/Land development Snow Skiing Activities Unknown	Medium Medium Medium Medium Medium Medium Medium Medium	2007 2007 2007 2006 2006 2006 2006 2019	City of Big Bear Lake County of San Bernardino
Summit Creek	801.710	1 mile	Nutrients	Construction/Land Development	Medium	2008	City of Big Bear Lake, County of San Bernardino
Knickerbocker Creek	801.710	2 miles 2 miles	Metal Pathogens	Unknown Non-point Source Unknown Non-point Source	Medium	01/03 – 01/05 Sole Source	City of Big Bear Lake, County of San Bernardino
Grout Creek	801.720	2 miles 2 miles	Metal Nutrients	Unknown Non-point Source Unknown Non-point Source	Medium	01/02 – 01/05 2008	City of Big Bear Lake, County of San Bernardino
Rathbone Creek	801.720	2 miles 2 miles	Nutrients Sedimentation/Siltation	Unknown Non-point Source Snow Skiing Activities	Medium	2008 2006	City of Big Bear Lake, County of San Bernardino
Mountain Home Creek, East Fork	801.700	1 mile	Pathogens	Unknown Non-point Source	Low	2019	County of San Bernardino
Mountain Home Creek	801.580	4 miles	Pathogens	Unknown Non-point Source	Low	2019	County of San Bernardino
Mill Creek (Prado Area)	801.250	4 miles	Nutrients Suspended Solids	Agriculture, Dairies Dairies	Medium Medium	2019 01/00 – 01/05	Ontario, Rancho Cucamonga, Upland, SBCFCD, County of San Bernardino
Mill Creek, Reach 1	801.580	5 miles	Pathogens	Unknown Non-point Source	Low	2019	Redlands, SBCFCD, County of San Bernardino
Mill Creek, Reach 2	801.580	8 miles	Pathogens	Unknown Non-point Source	Low	2019	SBCFCD, County of San Bernardino
Santa Ana River, Reach 4	801.270	12 miles	Pathogens	Non-point Source	Low	2019	Colton, Rialto, Highland, Grand Terrace, Redlands, City of San Bernardino, SBCFCD, County of San Bernardino
Lytle Creek	801.400	18 miles	Pathogens	Unknown Non-point Source	Low	01/08 – 01/11	City of San Bernardino, SBCFCD, County of San Bernardino
Chino Creek, Reach 1	801.210	2 miles	Nutrients	Agriculture Dairies	Medium	2019	Chino, Chino Hills, SBCFCD, County of San Bernardino
Prado Park Lake	801.210	60 acres	Nutrients	Non-point Source	Low	01/08 – 01/11	Chino, Chino Hills, County of San Bernardino

<sup>18</sup> Based on STATE BOARD 2006 CWA Section 303(d) List of Water Quality Limited Segments, Santa Ana Regional Water Quality Control Board, USEPA Approved June 28, 2007 ([http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/docs/303dlists2006/epa/r8\\_06\\_303d\\_reqtmlds.pdf](http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r8_06_303d_reqtmlds.pdf))

<sup>19</sup> Big Bear Lake is recommended for delisting for copper in the Proposed 2008 303(d)-305(b) Integrated Report

<sup>20</sup> Big Bear Lake is recommended for delisting for sedimentation/siltation in the Proposed 2008 303(d)-305(b) Integrated Report

<sup>21</sup> Resource extraction was removed as a potential source for Mercury in Big Bear Lake and replaced with atmospheric deposition in the Proposed 2008 303(d)-305(b) Integrated Report



## **VI. FIRST, SECOND AND THIRD-TERM PERMITS; URBAN STORM WATER RUNOFF POLLUTION CONTROL PROGRAMS/POLICIES**

Prior to EPA's promulgation of the final storm water regulations, the counties of Orange, Riverside and San Bernardino requested areawide NPDES permits for storm water runoff. On August 29, 1990, the Regional Board issued Order No. 90-136 to the San Bernardino County permittees (first-term permit). In 1996, the Board adopted Order No. 96-32 (second-term permit). On October 25, 2002, the Board adopted Order No. R8-2002-0012 (third-term permit). These permits included the following requirements as outlined in the storm water regulations:

1. Prohibited non-storm water discharges to the MS4s, with certain exceptions.
2. Required the municipalities to develop and implement a Municipal Storm Water Management Plan (MSWMP) to reduce pollutants in urban storm water runoff to the maximum extent practicable (MEP).
3. Required the discharges from the MS4s to implement Best Management Practices (BMPs) to the MEP to meet water quality standards in receiving waters.
4. Required the municipalities to identify and eliminate illicit connections and illegal discharges to the MS4s.
5. Required the municipalities to establish and maintain legal authority to enforce storm water regulations.
6. Required monitoring of dry weather flows, storm flows, and receiving waters and conduct program assessments.
7. Required the permittees to inventory, prioritize and inspect construction sites and industrial and commercial facilities based on threat to water quality.
8. Required the permittees to develop a restaurant inspection program to address practices that may have an impact urban runoff quality such as: oil and grease disposal; trash bin area management; parking lot cleaning; spill clean-up; and maintenance of grease traps and interceptors.
9. Required the permittees to review and approve Water Quality Management Plans for categories of new development and significant redevelopment projects to address the impact of post-development runoff on water quality and hydromodification.
10. Required the permittees to develop a unified response plan to respond to any sewage spills that may have an impact on receiving water quality (Sanitary Sewer Overflow Unified Sewage Response Plan, July 1, 2003).

The following programs and policies have been implemented or are being implemented by the permittees. During the first term permit, the permittees developed a Drainage Area Management Plan (1993 DAMP). The 1993 DAMP included a number of BMPs and a very extensive public education program. The monitoring programs for the first

and second term permit included 10 monitoring stations within streams and flood control channels. The number of monitoring stations was later reduced to 5 stations to allow the Permittees to apply resources to a bacterial source monitoring program. The Executive Officer approved a delay in implementing the bioassessment requirement of the third term permit to allow the development of indices of biological integrity that could be applied to inland waters. Subsequently, a regional bioassessment monitoring program was initiated by the Surface Water Ambient Monitoring Program (SWAMP) to determine the conditions of the receiving water in a more holistic manner. This Order requires the Permittees to participate in the regional bioassessment monitoring program. The findings and conclusions from these monitoring stations and monitoring programs (Riverside County, Orange County and others are participating in this regional effort) have been used to identify problem areas and to re-evaluate the monitoring program and the effectiveness of the BMPs. The future direction of some of these program elements will depend upon the results of the ongoing studies and a holistic approach to watershed management.

Other elements of the MSWMP included identification and elimination of illicit connections and illegal discharges and establishment of adequate legal authority to control pollutants in storm water discharges. The permittees have completed a survey of their storm drain systems to identify illegal/illicit connections and have adopted appropriate ordinances to establish legal authority. Some of the more specific achievements during the previous term permits are as follows:

1. Interagency Agreements and Coordination: The Permittees established a program management structure through an interagency Implementation Agreement and established a Management Committee with designated representatives from each of the Permittees to guide the program. The Permittees reviewed and revised the Implementation Agreement as part of the ROWD.
2. Ordinances, Plans and Policies: The Permittees completed a review of their storm drain ordinances and enforcement procedures for prohibiting discharges to the MS4s and for taking appropriate enforcement actions. The Area-Wide Enforcement Guidelines were subsequently prepared to support enforcement actions and to introduce consistency among the Co-Permittees' enforcement actions. In 2004, the Permittees replaced their Model Guidelines for New Development and Redevelopment with the Water Quality Management Plan Guidance and Template (WQMP), which was approved in 2004 and updated in 2005. The Permittees continue to provide training for appropriate public agency personnel on the Municipal Activities Pollution Prevention Strategy (MAPPS). The goal of this program is to ensure that public agency facilities and associated activities do not become a source of pollutants in storm water runoff. These "facilities" include the Permittees' vehicle and equipment fueling and fleet maintenance yards, corporate yards, hazardous materials storage facilities, material transfer and storage facilities, waste management and storage, fire stations, animal shelters, and municipal swimming pools. The MAPPS lists the

potential pollutants for these facilities and provides a list of BMPs for controlling these pollutants.

3. Municipal Inspections: The Permittees completed the development of the MS4 Solution Database. This database houses the inventory of construction, industrial, and commercial sites/facilities within each Permittee's jurisdiction. The inventory is regularly updated with new information.

The Permittees developed and distributed BMP guidelines for the control of pollutants from mobile vehicle maintenance, carpet cleaning, commercial landscape maintenance, and pavement cutting activities.

4. HCOC Mapping: In early 2005, the Permittees initiated a a GIS-based mapping program to identify stream channels in the area that could be susceptible to excessive erosion and should be considered in assessing hydrologic conditions of concern (HCOC). Upon completion of this project, it will be integrated into the Watershed Action Plan.
5. Illegal Discharge/Illicit Connections: Litter, Debris and Trash Control: The Permittees completed a general characterization of the trash collected from the permitted area and are using this information to develop BMPs specifically targeting the major sources of trash in urban runoff.
6. Municipal Facilities/Activities: The San Bernardino County Flood Control District completed an assessment of their flood control facilities to evaluate opportunities to configure and/or to reconfigure channel segments to function as pollution control devices and to optimize beneficial uses.

The Permittees developed and distributed BMP guidelines for the control of household use of fertilizers, pesticides, herbicides, and other chemicals, and pavement cutting activities.

The Permittees worked with the County Fire Chiefs Association to develop a list of appropriate BMPs to be implemented to reduce pollutants from training activities, fire hydrant/sprinkler testing or flushing, non-emergency fire fighting, and any BMPs that could feasibly be implemented to address flows that occur during emergency firefighting activities.

7. Program Review: The annual reports and the Report of Waste Discharge included an effectiveness assessment of various program elements. Based on the monitoring results and the program effectiveness assessments, the 2006 ROWD recommended a shift to compliance-based outcomes measured primarily by compliance with water quality objectives and TMDL implementation. The ROWD also included an analysis of the impact of urban storm water runoff on the beneficial uses and recommended a risk-based approach to address problems associated with urban storm water runoff.

The requirements specified in this Order are consistent with the approach recommended in the ROWD including the TMDLs adopted by the Regional Board and approved by the State and the USEPA.

8. Public Education: In addition to developing and distributing fact sheets, brochures, and flyers with BMP information to control the discharge of pollutants in urban runoff, the Permittees have utilized a number of other avenues to convey this message to the public. These include: (1) public service announcements utilizing a multi-media approach, such as newspapers, radio, and television; (2) presentations at elementary schools and high school automotive classes; (3) educational displays at libraries and public buildings throughout the permitted area; (4) a point-of-purchase campaign with fact sheets containing information on integrated waste management, proper use of pesticides and fertilizers and integrated pest management programs; (5) a point-of-discharge campaign by warning the public about the dangers of waste disposals into the storm drains by stenciling all storm drain inlets; and (6) a web-site with links to other programs and services offered by the Permittees to combat storm water pollution including a 24-hour hotline to report spills, leaks and any illegal discharges to the MS4s. The Permittees have already met or exceeded the goal of a minimum of 5 million impressions per year by targeting all residents, businesses, commercial and industrial establishments within the Permitted area.

The Permittees also completed a public awareness survey to determine the effectiveness of their existing public and business education strategy. The permittees participated in joint outreach programs with other entities including, but not limited to,, SAWPA<sup>22</sup>, Caltrans, and other municipal storm water programs.

The most effective programs and public education efforts should be continued to reinforce the importance of public participation and awareness to control pollutants in urban storm water runoff.

The proposed Order includes additional requirements for an effective residential program as irrigation and nuisance flows from residential areas continue to be significant sources of nutrients, pesticides and other pollutants (from over fertilization or improper use of fertilizers, pesticides and other household chemicals).

9. Public Agency Training: During the second permit term, the Permittees developed and conducted an 8-hour training program on the Municipal Activities Pollution Prevention Strategy (MAPPS). The MAPPS training program provided a basic storm water training and task-specific education for all targeted Permittee staff. These included key staff involved in sewage system maintenance, storm drain system inspection and maintenance, landscape maintenance, road and street maintenance, and key staff at maintenance and storage facilities.

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<sup>22</sup> SAWPA: Santa Ana Watershed Project Authority

The MAPPs training was expanded in the 3<sup>rd</sup> term permit to include illegal discharge identification, response, and reporting; industrial/commercial inspection program, new and redevelopment program and public agency activities program. During the third-term permit, the Permittees refined their training program and developed web-based training modules to provide better access to the training program. The online training program is enhanced by various other training efforts, including live presentations and on the job training.

However, Regional Board staff conducted audits of the urban runoff program for each of the Permittees and determined that many of the Permittees' storm water program staff and contract staff were not adequately trained. The fourth-term permit requires the Permittees to develop appropriate curriculum for staff at various levels to make the storm water program more effective.

10. Watershed Activities: The Principal Permittee represented the Permittees in various watershed efforts dedicated to improving water quality, gathering technical information to support the MS4 program, TMDL activities, and regional and sub-regional monitoring programs. (See Section VII, below for a list of these programs.)

The Permittees worked with other local and State agencies to provide a consistent urban storm water pollution control message to the public. These programs included:

- a. Public Health (Safe Drinking Water Program, Vector Control Program, Housing/Property Improvement Program, and Food Protection Program),
- b. Fire Department - Hazardous Materials Division, (Household Hazardous Waste Program, Emergency Response and Enforcement, Field Services, and Local Oversight Program),
- c. Economic Development / Public Services Group (Flood Control Function, Transportation Function, Waste Management Function, Regional Parks Function, Land Use Services and Code Enforcement Function), and
- d. San Bernardino County Special Districts (Operations Divisions consisting of Street Lighting Districts, Recreation and Parks Districts, Road Districts; Water and Sanitation Division consisting of nine water districts and seven sanitation districts).

The Regional Board and the Permittees recognize the importance of watershed-based plans to address such complex issues related to the control of pollutants from various sources in urban storm water runoff. The fourth term Permit includes requirements for the development and implementation of [a](#) Watershed Action Plans (see Section VIII, below).

11. Related Activities: The Permittees stabilized a number of flood control channels, constructed a sediment basin, expanded an existing basin, and identified, eliminated or properly documented illicit connections to the MS4s.

12. Water Quality Monitoring: The Permittees continue to monitor water quality at five sites for a variety of constituents. Three of the five sites were outfall locations selected to represent the quality of storm water from the drainage area; two sites serve as receiving water monitoring sites. The Permittees also participate in a number of TMDL-related or other regional or sub-regional monitoring programs. A number of programs related to the monitoring programs were completed during the third term permit (see Section VII, below). These monitoring programs continue to indicate that urban storm water runoff contains elevated levels of pollutants (see Section VII, below).

The fourth-term Permit includes additional monitoring requirements consistent with the federal regulations (40 CFR 122.48) and California Water Code Sections 13267 and 13383.

## **VII. WATER QUALITY ASSESSMENTS**

An accurate and quantifiable measurement of the impact of the various elements of the storm water management programs is difficult, due to the temporal and spatial variations in storm water runoff quality, incremental nature of BMP implementation, the lack of comprehensive baseline monitoring data, and the existence of some of the programs and policies prior to initiation of formal storm water management programs. There are generally two accepted methodologies for assessing water quality improvements: (1) conventional monitoring such as chemical-specific water quality monitoring; and (2) programmatic assessments such as monitoring of the amount of household hazardous waste collected and disposed off at appropriate disposal sites, the amount of used oil collected, the amount of debris removed, etc.

Water quality monitoring data submitted to date document a number of exceedances of water quality objectives specified in the Basin Plan, CTR criteria and/or USEPA's storm water benchmarks for fecal coliform bacteria, total suspended solids (TSS), nutrients, COD and metals. Toxicity has also been observed at some of the monitoring locations. The 303(d) list of impaired waterbodies within the Region (see Table 2, above) also indicates that urban runoff is a significant source for these impairments. These findings indicate that urban storm water runoff continues to cause or contribute to water quality impairments.

A comparison of wet weather water quality monitoring data for 2000-2006<sup>23</sup> with that from 1994-1999<sup>24</sup> shows that the median concentrations for most constituents have not changed significantly. Furthermore, monitoring data for the period 1994-2006 indicate that median concentrations of wet weather composite samples at monitoring stations<sup>25</sup>

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<sup>23</sup> 2006 ROWD

<sup>24</sup> 2002 ROWD

<sup>25</sup> Drainage at Site 2 (Cucamonga Creek @ Hwy 60) is predominantly urban, influenced by commercial and industrial land uses with some contribution from open space/rural and residential land uses. The predominant land use at Site 3 (Cucamonga Creek @ Hellman) is agricultural, but there is contribution from open space/rural, and discharge from a municipal wastewater treatment plant between Sites 2 and



2, 3, and 5 exceeded the USEPA benchmarks for TSS, COD, NO<sub>3</sub>-N, and several metals. With the exception of Site 10 (Santa Ana River upstream of Seven Oaks Dam, tributary to mostly undeveloped areas), coliform bacteria concentrations were far above the Basin Plan water quality objectives. These data support the need for continued monitoring and additional control measures to control the discharge of pollutants from the MS4s.

To understand background indicator bacteria levels in the watershed necessary for the implementation of the MSAR TMDL, the Permittees conducted background indicator bacteria studies. Samples were collected quarterly from August 2000 to June 2006 during dry weather (<0.1 inch precipitation) at three sites (Cucamonga Canyon Site, Seven Oaks Dam Site, and Forest Falls Site) with no direct impact from urban runoff, sanitary sewer systems, or POTW discharge. The Seven Oaks Dam Site is located upstream of the dam and corresponds to stormwater monitoring Site 10. The Forest Falls Site is downstream of forested areas with few permanent campsites. Statistics from samples collected from December 2003 to June 2006, suggested that the Seven Oaks Dam Site (Site 10) had the highest concentrations of enterococcus and fecal streptococcus present, and that Cucamonga Creek Site and the Forest Falls Site have lower concentrations. Due to the predominance of non-detect data, similar determinations cannot be made for total coliform, *E. coli*, or fecal coliform concentrations. However, overall, samples taken at the Forest Falls Site exhibited the lowest concentrations of these types of indicator bacteria<sup>26</sup>.

The Principal Permittee conducted an analysis of the receiving water monitoring data collected during the last 15 years for a number of monitoring sites (Sites 2, 3, 8<sup>27</sup>, and 10<sup>28</sup>). This analysis indicates that the most significant water quality problem associated with urban storm water runoff is bacterial contamination. The Permittees' monitoring data were then compared to monitoring data available from other sources (NAWQA, RWQCB 305(b) Assessment) to determine beneficial use impacts and pollutants causing the impacts. This analysis was then used to prioritize problem areas and to propose a risk-based approach to address these problems.

Based on the evaluation of monitoring data described above, the 2006 ROWD prioritized the pollutants of concern with regards to storm water management as follow:

- a. High Priority: Coliform bacteria
- b. Medium Priority: Zinc, copper, lead
- c. Low Priority: Nutrients, COD, TSS

During the prior permit terms, there was an increased focus on watershed management initiatives and coordination among the municipal permittees in Orange, Riverside and San Bernardino Counties. These efforts resulted in a number of regional monitoring programs

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3. Monitoring site 5 (Hunts Lane n/o Hospitality Lane) is within a constructed storm drain system and flow is mostly from commercial and light industrial land uses with some urban contribution.

<sup>26</sup> 2005-2006 Annual Report.

<sup>27</sup> Site 8 station is located in the Santa Ana River (SAR) at Hamner Avenue, runoff is mostly from urban land uses.

<sup>28</sup> Site 10 station is located at SAR, upstream of Seven Oaks Dam, runoff is mostly from open/rural areas.

and other coordinated program and policy developments. The Principal Permittee continues to be an active participant in the Storm water Quality Standards Task Force (SWQSTF), the Big Bear TMDL and Middle Santa Ana River (MSAR) Bacterial Indicator TMDL, and the Storm Water Monitoring Coalition Studies. In addition to the TMDL implementation and monitoring activities, the Permittees participate in the Regional Integrated Freshwater Bioassessment Monitoring Program and the BMP Effectiveness Project to assess the effectiveness of LID techniques.

The Permittees, as participants in the SMC, have completed several monitoring-related activities, including Comparative Evaluation of Microbial Source Tracking Techniques, Model Monitoring Program Guidance, Peak Flow Study, and Laboratory Inter-Calibration.

It is anticipated that with continued implementation of the MSWMP, the ROWD and the requirements specified in this Order, the goals and objectives of the storm water regulations will be met, including protection of the beneficial uses of all receiving waters.

### **VIII. FUTURE DIRECTION/2006 ROWD & MSWMP**

The NPDES permit renewal application (2006 ROWD) and the areawide Municipal Storm Water Management Program (MSWMP) describe the programs and policies the Permittees are proposing to implement during the fourth term permit. The 2006 ROWD and MSWMP are the principal guidance documents for urban storm water management programs within San Bernardino County.

During the first three permit cycles, the Permittees focused on characterizing storm water quality and establishing a fundamentally sound program in each of the key areas identified in EPA regulations [40 CFR §122.34(b)]: (1) public education and outreach; (2) public involvement/participation; (3) illicit discharge detection and elimination; (4) construction site storm water runoff control; (5) post-construction storm water management in new development and redevelopment; and (6) pollution prevention/good housekeeping for municipal operations.

The sampling data collected over the years have been used to prioritize the most significant water quality problems in the receiving waters. As indicated in Section VII, above, the highest priority for the storm water program is the reduction of bacterial contamination.

For the fourth-term Permit, the Permittees have proposed to develop and implement a risk-based, outcome-oriented, compliance-focused program and will shift storm water management program from process-based outcomes which were mostly measured through completion of programmatic or administrative tasks. Under the fourth-term Permit, compliance will be determined based on attaining water quality standards and compliance with the wasteload allocations specified in the Total Maximum Daily Loads (TMDLs). Risk-based assessment and management aim to reallocate and reapportion program resources to target pollutants-of-concern that pose the greatest threat to human health or the environment. An outcome-oriented program places much greater emphasis on demonstrating the effectiveness of various implementation activities. Direct measures (such as changes in water quality, tons of hazardous waste collected,

etc.) will be preferred over indirect measures (such as advertising impressions, events attended, etc.). In particular, where TMDLs have been adopted for specific pollutants, the Permittees will shift available resources to be compliance-focused, to achieve compliance with water quality objectives. Program elements will be targeted toward executing the requirements identified in the TMDL implementation plans and pollution reduction goals specified in this Order. The primary goal of a compliance-focused program is to ensure storm water discharges consistently meet the water quality objectives identified in the Basin Plan. A comprehensive water quality monitoring program that is proposed in the fourth-term Permit will be used to evaluate the success of this new initiative.

~~TMDL wasteload allocations for bacterial indicator in the Middle Santa Ana River watershed and wasteload allocations for nutrients specified in the Nutrient TMDLs for Dry Hydrological Conditions in the Big Bear Lake watershed are incorporated into this Order.~~ [c5]

This Order requires that the results of the water quality monitoring provide the feedback loop to evaluate the effectiveness of the BMPs and programs implemented in the watershed and demonstrate Permittees' progress towards compliance with the wasteload allocations. Other TMDLs planned during the next MS4 Permit term include Big Bear Lake Nutrient TMDL (for all weather conditions), Big Bear Lake Mercury TMDL, Big Bear Lake and Rathbone Creek Sediment TMDL, and Big Bear Lake Watershed Metals TMDLs. The Permittees, within the affected watersheds, are required to participate in the development and implementation of those TMDLS. This Order may be reopened to incorporate any TMDLS that may be adopted and approved during the permit term.

An audit of each of the Permittees' storm water management programs during the third term permit indicated no clear nexus between the watershed protection principles specified in the MSWMP and the WQMP and the Permittees' General Plan or related documents such as Development Standards, Zoning Codes, Conditions of Approval, Project Development Guidance, etc. It appears that aspects of the existing procedures, Development Standards, Ordinances and Municipal Codes may be barriers to implementation of watershed protection principles, especially low impact development techniques. This Order requires the Permittees to review and revise the Permittees' General Plan, Comprehensive or Master Plan, Municipal Codes, Subdivision Ordinances, Project Development Standards, Conditions of Approval or related documents to facilitate implementation of low impact development and other watershed protection principles.

The USEPA has recommended a shift to watershed-based NPDES permitting<sup>29</sup> and a watershed approach<sup>30</sup> to CWA programs, including NPDES programs. The Permittees and the Regional Board also recognize that a watershed-based approach is expected to

<sup>29</sup> EPA: Watershed-based NPDES permitting is a process that emphasizes addressing all stressors within a hydrologically-defined drainage basin, rather than addressing individual pollutant sources on a discharge-by-discharge basis.

<sup>30</sup> EPA (1996a): "The watershed approach is a coordinating framework for environmental management that focuses public and private sector efforts to address the highest priority problems within hydrologically defined geographic areas, taking into consideration both ground and surface water flow."

be effective in controlling pollutants in urban storm water runoff. Consistent with this approach, this Order requires the Permittees to develop, implement and monitor the effectiveness of a Watershed Action Plan that integrates hydromodification and water quality management strategies with land use planning policies, ordinances, and plans within each jurisdiction. A watershed approach considers the diverse pollutant sources and stressors and watershed goals within a defined geographic area (i.e., watershed boundaries) and it has three basic components: (1) *Geographic Focus*: Watersheds are nature's boundaries. They are the land areas that drain to surface waterbodies, and they generally include lakes, rivers, estuaries, wetlands, streams, and the surrounding landscape. Ground water recharge areas are also considered. (2) *Sound Management Techniques Based on Strong Science and Data*: Sound scientific data, tools, and techniques are critical to inform the process. Actions taken include characterizing priority watershed problems and solutions, developing and implementing action plans, and evaluating their effectiveness within the watershed. (3) *Partnerships/Stakeholder Involvement*: Watersheds transcend political, social, and economic boundaries. Therefore, it is important to involve all the affected interests in designing and implementing goals for the watershed. Watershed teams may include representatives from all levels of government, public interest groups, industry, academic institutions, private landowners, concerned citizens, and others.

To promote transparency and consistency within the permitted area, this Order requires each Permittee to develop its own local implementation plan (LIP) that specifies how each program element of the MSWMP and this Order will be implemented within its jurisdiction. The LIP shall specify the Permittee's legal authority and standard operating procedures including but not limited to its ordinances, plans, policies, procedures, personnel, tasks, schedules, checklists, educational materials, forms, maps of drainage areas, maps of wetlands or other environmentally sensitive areas, tools and resources utilized to implement the MSWMP requirements and requirements specified in this Order within its jurisdiction. The LIP shall identify the organizational units and personnel responsible for implementation of each program element, establish internal reporting requirements to ensure and promote accountability, and shall describe an adaptive method of evaluation and assessment of program effectiveness for the purpose of identifying program improvements.

The audits conducted by the Regional Board have also shown a need to improve program effectiveness assessment. This Order specifies quantifiable measures for evaluating program effectiveness.

The above-mentioned strategies for the fourth term permit build upon and continue the programs and policies developed by the Permittees during the prior term permits as described in Sections VI and VII, above. A combination of these programs and policies and the requirements specified in this Order should improve control of pollutants in storm water runoff from storm water conveyance facilities owned and/or controlled by the permittees.

## **IX. PERMIT REQUIREMENTS**

The legislative history of storm water statutes (1987 CWA Amendments), US EPA regulations (40CFR Parts 122, 123, and 124), and clarifications issued by the State Water Resources Control Board (State Board, Orders No. WQ 91-03 and WQ 92-04) indicate that a non-traditional NPDES permitting strategy was anticipated for regulating urban storm water runoff. Due to economic and technical infeasibility of full-scale end-of-pipe treatments and the complexity of urban storm water runoff quality and quantity, MS4 permits generally include narrative requirements for the implementation of BMPs in place of numeric effluent limits.

The requirements included in this Order are meant to specify those management practices, control techniques and system design and engineering methods that will result in maximum extent practicable (MEP) protection of the beneficial uses of the receiving waters. The State Board (Orders No. WQ 98-01 and WQ 99-05) concluded that MS4s must meet the technology-based MEP standard and water quality standards (water quality objectives and beneficial uses). The U. S. Court of Appeals for the Ninth Circuit subsequently held that strict compliance with water quality standards in MS4 permits is at the discretion of the permitting authority. Any requirements included in the Order that are more stringent than the federal storm water regulations is in accordance with the CWA Section 402(p)(3)(iii), and the California Water Code Section 13377 and are consistent with the Regional Board's interpretation of the requisite MEP standard.

The 2006 Report of Waste Discharge (ROWD) included a discussion of the current status of San Bernardino County's urban storm water management program and the proposed programs and policies for the next five years (fourth term permit). A separate Municipal Storm Water Management Plan (MSWMP), submitted with the ROWD, defines the storm water programs and activities to be implemented during the fourth permit term and includes by reference a number of related documents such as the Water Quality Management Plan (WQMP). This Order incorporates these documents (2006 ROWD and MSWMP and other related documents).

This Order recognizes the significant progress made by the Permittees during the prior term permits in implementing various elements of the storm water program. This Order also recognizes regional and innovative solutions to such a complex problem, addresses deficiencies of the Permittees' storm water programs observed during the audits conducted by Regional Board staff, considers comments by the USEPA on other draft MS4 Permits and recommendations in the recently published report on Urban Storm Water Management by the National Research Council<sup>31</sup> (NRC) study. This Order specifies quantifiable performance measures to determine compliance and assess the effectiveness of the storm water programs. This Order incorporates an integrated watershed approach in solving water quality and hydromodification impacts resulting from urbanization and aims to promote low impact development techniques as a key element to mitigate impacts from new and redevelopment projects. The proposed permit also includes water quality based effluent limits based on wasteload allocations

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<sup>31</sup> National Research Council Report (2008), [http://www.nap.edu/catalog.php?record\\_id=12465](http://www.nap.edu/catalog.php?record_id=12465)



in approved TMDLs. The goal of these programs and policies that are included in this Order is to achieve and maintain water quality standards in the receiving waters.

The major requirements include: 1) Discharge prohibitions; 2) Effluent limitations and discharge specifications, including wasteload allocations for discharges to 303(d) listed waterbodies with adopted TMDLs and Permittees' De Minimus Discharges; 3) Receiving water limitations; 4) Legal authority and enforcement; 5) Prohibition on illicit connections and illegal discharges; 6) Control of sewage spills, sanitary sewer line leaks, septic system failures and portable toilet discharges; 7) Municipal inspection programs; 8) New development, including significant re-development requirements, including quantifiable measures for low impact development implementation and management of hydrologic conditions of concern and a time schedule to develop a watershed approach to address water quality and hydromodification issues; 9) public education and outreach; 10) Municipal facilities/activities; 11) Municipal construction projects; 12) Training program for storm water managers, planners, inspectors, and municipal contractors; and 13) Monitoring and reporting requirements.

These programs and policies are intended to improve urban storm water quality and protect the beneficial uses of receiving waters of the region.

## **1. DISCHARGE PROHIBITIONS**

In accordance with CWA Section 402(p)(3)(B)(ii), this Order prohibits the discharge of non-storm water to the MS4s, with a few exceptions. The specified exceptions are consistent with 40 CFR 122.26(d)(2)(iv)(B)(1). If the permittees or the Executive Officer determines that any of the exempted non-storm water discharges contain pollutants, a separate NPDES permit, a separate Waste Discharge Requirement or coverage under the Regional Board's De Minimus permit will be required.

## **2. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS, INCLUDING WASTE LOAD ALLOCATIONS FOR DISCHARGES TO 303(D) LISTED WATERBODIES WITH ADOPTED TMDLS**

This Order regulates the discharge of urban runoff ~~in the storm water permits~~ as per 40 CFR 122.26(d)(2)(iv)(B)(1). This Order also regulates de minimus types of discharges from Permittees' facilities and/or operations. The Regional Board regulates some of the "authorized discharges" under the de minimus permit. The Permittees' de minimus discharges are subject to maximum daily concentration limits consistent with the Regional Board's General De Minimus Permit for Discharges to Surface Waters, Order No. R8-200910-0003, NPDES No. CAG 998001. Permittees' de-minimus discharges covered under this Order include: 1) dewatering wastes from subterranean seepage, except for discharges from utility vaults; 2) discharges resulting from hydrostatic testing of vessels, pipelines, tanks, etc.; 3) discharges resulting from the maintenance of potable water supply pipelines, tanks, reservoirs, etc.; 4) discharges resulting from the disinfection of potable water supply pipelines, tanks, reservoirs, etc.; 5) discharges from potable water supply systems resulting from initial system startup, routine startup, sampling of influent flow, system failures, pressure releases, etc.; 6) discharges from fire



hydrant testing or flushing; 7) swimming pool discharges; 8) discharges resulting from diverted stream flows; and 9) Construction dewatering wastes. This Order specifies procedures for Regional Board notification of Permittees' de-minimus discharges.

~~This Order requires Permittees to comply with established TMDL wasteload allocations specified for urban runoff and/or storm water by implementing the necessary BMPs.~~ [c6]

NPDES regulations at 40 CFR 122.44(d)(vii)(B) require that NPDES permits be consistent with wasteload allocations approved by the USEPA. Wasteload allocations in adopted TMDLs for the Middle Santa River (MSAR) Watershed Bacterial Indicator, and the Big Bear Lake Nutrient TMDL for Dry Hydrological Conditions are included in this Order as Water Quality-Based Effluent Limitations (WQBELS). However, since the compliance dates of the adopted TMDLs are beyond the expected 5-year duration of this NPDES Permit, the Permittees are required to monitor and report effectiveness of the BMPs specified in the TMDL Implementation Plans and this Order with respect to pollutant reduction goal(s) as one measure of progress towards attainment of WLAs in accordance with the compliance schedules specified in the TMDL Implementation Plans. If water quality standards in the impaired receiving waters are met through implementation of appropriate control measures, the Basin Plan will be amended to revise the TMDLs.

### **3. RECEIVING WATER LIMITATIONS**

Receiving water limitations are included to ensure that discharges from the MS4 systems do not cause or contribute to violations of applicable water quality standards in receiving waters. The compliance strategy for receiving water limitations is consistent with the USEPA and State Board guidance and recognizes the complexity of storm water management.

This Order requires the permittees to meet water quality standards in receiving waters in accordance with USEPA requirements, as specified in State Board Order No. WQ 99-05. If water quality standards are not met through implementation of BMPs, the permittees are required to re-evaluate the programs and policies and propose more effective BMPs. Compliance determination will be based on this iterative BMP implementation/compliance evaluation process.

### **4. LEGAL AUTHORITY/ENFORCEMENT**

The Permittees have adopted a number of ordinances, municipal codes, and other regulations to establish legal authority, control discharges to the MS4s and enforce these regulations as specified in 40 CFR 122.26(d)(2)(i)(A, B, C, E, and F). The Permittees are required to enforce these ordinances and to take enforcement actions against violators (40 CFR 122.26(d)(2)(iv)(B-D)).

The third term required the Permittees to establish the authority and resources to administer either civil or criminal penalties and/or penalties for violations of their local water quality ordinances. Although a few Permittees have imposed monetary penalties for repeated violations of its ordinances, program evaluations conducted during the third term permit showed that enforcement activities

undertaken by a majority of the Permittees have consisted primarily of Notices of Violation (NOVs) that are mostly to educate the public on the environmental consequences of illegal discharges. In some cases, multiple NOVs and stop work orders were issued to the same facilities for recurring violations without progressive enforcement. In the case of San Bernardino County, additional action has sometimes included recovery of investigative and cleanup costs from the responsible party. In case of egregious or criminal violations, the option exists for referral to the County District Attorney for possible prosecution. The fourth term permit requires the Permittees to document and implement progressive and decisive enforcement actions, evaluate the effectiveness of their enforcement program and sanctions by tracking compliance and evaluating the amount of time to return to compliance. This Order also requires the Permittees to establish the authority to immediately abate discharges to its MS4s caused by unresponsive dischargers and recover its costs.

Since the 2006 ROWD identified bacteria as the highest priority pollutant for the permitted area, this Order requires the Permittees to promulgate ordinances that would specify control measures for known pathogen or bacterial sources, such as animal wastes, if those types of sources are present within their jurisdiction.

This Order requires the Permittees to include in the Local Implementation Plan (LIP) their legal authority and mechanisms to implement the various program elements required by this Order to properly manage, reduce and mitigate potential pollutant sources within each Permittee's jurisdiction. The LIP shall include citations of appropriate local ordinances, identification of departmental jurisdictions and key personnel in the implementation and enforcement of these ordinances. The LIP shall include procedures, tools and timeframes for progressive enforcement actions and procedures for tracking compliance.

## **5. ILLEGAL DISCHARGES / ILLICIT CONNECTIONS TO MS4s, LITTER DEBRIS AND TRASH CONTROL**

Federal regulation, 40 CFR 122.26(d)(2)(iv)(B), requires the Permittees to eliminate illicit discharges to the MS4s. During the second term permit, the Permittees completed a survey of the MS4 systems and eliminated or permitted all identified illicit connections. The Permittees have also established a program to address illegal discharges and a mechanism to respond to spills and leaks and other incidents of discharges to the MS4s. Program evaluations conducted during the third term permit showed that this program element is primarily complaint driven or an incidental component of municipal inspections or conveyance system inspections.

This Order requires the Permittees to develop a plan for each jurisdiction to conduct focused, systematic field investigations, outfall reconnaissance survey, indicator monitoring, and track their sources<sup>32</sup>. A proactive illicit discharge detection and elimination (IDDE) program shall be integrated with other program elements including: GIS mapping of the Permittees' conveyance systems to track

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<sup>32</sup> Table 2: Land uses, Generating Sites and Activities that Produce Indirect Discharges from IDDE, A Guidance Manual for Program Development and Technical Assessments, October 2004 CWP.

sources, aerial photography, municipal inspection programs for construction, industrial, commercial, storm drain systems, municipal facilities, etc., watershed monitoring, public education and outreach, pollution prevention, stream restoration efforts, and rapid assessment of stream corridors to identify dry weather flows and illegal dumping.

## **6. SEWAGE SPILLS, INFILTRATION INTO MS4 SYSTEMS, SANITARY SEWER LINE LEAKS, SEPTIC SYSTEM FAILURES AND PORTABLE TOILET DISCHARGES**

Federal regulation, 40 CFR 122.26(d)(2)(iv)(B)(4), requires the Permittees to develop procedures to prevent, contain, and respond to spills that may discharge into the MS4s. The Permittees have already developed a program to address various types of spills to the MS4s. This Order requires the Permittees to continue to implement the unified sewer response plans in collaboration with the local sanitation districts. To facilitate swift response actions, the Permittees are required to provide 24-hour access to MS4s to the sanitation districts. The Permittees should also work cooperatively with the local sanitation districts to determine if exfiltration from leaking sanitary sewer lines is causing or contributing to urban storm water pollution problems. In addition, the Permittees are required to control infiltration or seepage from sanitary sewers to the MS4s through routine preventive maintenance of the storm drain system (40 CFR 122.26(d)(2)(iv)(B)(7)). This Order also requires the Permittees to implement control measures and procedures to prevent, respond to, contain and clean up all sewage and other spills from sources such as portable toilets and septic systems.

On May 2, 2006, the State Board issued the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (SSO Order) to address proper management and operation of sewer collection systems and to control sanitary sewer overflows. It requires dischargers/enrollees to develop and implement a written Sewer System Management Plan (SSMP) approved by the discharger's governing board and report sewer spills through an on-line reporting system. This Order requires the Permittees to coordinate the review of the unified sewage spill response plan developed during the third term permit with the local sewerage agencies to make it consistent with the requirements of the SSO Order. This Order also requires each Permittee to include in its LIP the interagency or interdepartmental sewer spill response coordination and responsibilities.

The MS4 program audits indicated that a majority of the Permittees with septic systems have inadequate information with regard to the number and location of systems within their jurisdiction. This Order requires the Permittees to develop an inventory of septic systems within its jurisdiction and establish a program to ensure that septic system failure rates are minimized.

## **7. MUNICIPAL INSPECTION PROGRAM**

Federal regulations, 40 CFR 122.26(d)(2)(iv)(A-D), require the Permittees to inventory, prioritize and inspect industrial, construction and commercial facilities. The third-term permit required the Permittees to inventory construction, industrial

and commercial facilities within their jurisdiction and to prioritize them for inspection based on threat to water quality. The permit specified the frequency at which high, medium, low priority sites are to be inspected. During the third term permit, the Permittees proposed to develop a risk-based scoring system to prioritize facilities for inspections. Until approval of this risk-based prioritization system, the Permittees are required to continue the inspection program and prioritize facilities for inspection based on threat to water quality as specified in the third-term permit.

An evaluation of the municipal inspection programs during the third term permit indicated certain deficiencies in the commercial, industrial and construction programs of some of the Permittees. In many instances, program documentation of progressive enforcement and facilities' return to compliance were not properly documented. This Order requires Permittees to document inspections and enforcement and evaluate the effectiveness of their inspection and enforcement program by tracking the time for facilities to return to compliance. During the third term permit, most of the Permittees utilized the MS4 Solution Database to document their facility inventory, inspections and enforcement activities. This Order requires the Permittees to update the information in the MS4 Solution Database or use an equivalent web accessible database on a regular basis. The Permittees who do not have an internet accessible database shall initiate quarterly reporting and update of the inventory, inspection and enforcement database for facilities within their jurisdiction.

In order to address discharges to the MS4s from residential sources, the fourth term permit requires the Permittees to develop and implement a residential program to prevent residential discharges from causing or contributing to a violation of water quality standards in the receiving waters (40 CFR 122.26(d)(2)(iv)(A)).

## **8. NEW DEVELOPMENT AND SIGNIFICANT REDEVELOPMENT**

Federal regulation, 40 CFR 122.26(d)(2)(iv)(A)(2), requires the Permittees to develop a comprehensive master plan to address discharges from new and significant redevelopment projects. During the third term permit, the Permittees revised their new development guidelines to address water quality and hydromodification impacts resulting from urbanization. A Water Quality Management Plan Guidance and Template was approved by the Regional Board in 2004 and amended in 2005. The Permittees were required to review and approve project-specific Water Quality Management Plans (WQMP) to address post-construction impacts. The WQMP should be designed to address water quality impacts, including hydrologic conditions of concern, from new and significant redevelopment projects through: (1) site design BMPs, including low impact development (LID) techniques; (2) source control BMPs; and (3) treatment control BMPs. This Order recognizes the importance of LID techniques to minimize the impact of urbanization on water quality. The fourth term permit requires the project proponents to infiltrate, harvest and reuse, evapotranspire, or bio-treat the volume of runoff from a 24-hour, 85<sup>th</sup> percentile storm event where feasible. The Order also provides alternatives and in-lieu programs for project sites where infiltration, harvesting and re-use, evapotranspiration and bio-treatment are not feasible.

Program evaluations conducted during the third term permit indicated a need for establishing a clear nexus between the watershed protection principles (including LID) and the planning and approval processes of the Permittees. This Order requires the Permittees to review and revise their Development Standards, Zoning Codes, Conditions of Approval, Development Project Guidance, ordinances, and other related documents, where feasible, to identify and eliminate barriers to incorporate watershed protection principles.

The Southern California Monitoring Coalition (SMC), including project lead agency, the San Bernardino County Flood Control District, in collaboration with SMC members, Southern California Coastal Water Research Project (SCCWRP) and the California Storm Water Quality Association (CASQA), is developing a Low Impact Development Manual for Southern California with funding from the State Water Resources Control Board, CASQA and the SMC. This manual will be incorporated into the CASQA BMP Handbooks. The Permittees are encouraged to utilize the manual as a resource for proper LID design and implementation techniques.

Program evaluations have also shown deficiencies [c7] in the Permittees' inspection, and tracking of post-construction BMPs. This Order requires the Permittees to revise their close-out procedures to include field verification that site design, source control and treatment control BMPs are operational and consistent with the approved WQMP.

This Order incorporates new project categories and revised thresholds for several categories of new development and redevelopment projects that trigger the requirement for a WQMP. The 2008 National Research Council (NRC) report<sup>33</sup> indicates that roads and parking lots constitute as much as 70% of total impervious cover in ultra-urban landscape, and as much as 80% of the directly connected impervious cover. Roads tend to capture and export more storm water pollutants than other impervious covers. As such, the Permittees are required to develop a standard design and post-development BMP guidance for streets, roads, highways, and freeway improvements that meet the performance standards for site design/LID BMPs, source control, treatment control as well as hydromodification control. The NRC report also indicates that there is a direct relationship between impervious cover and the biological condition of downstream receiving waters. The Permittees are required to address hydrologic conditions of concern from new development and significant redevelopment projects to minimize downstream impacts.

Consistent with a long term holistic approach to address water quality and hydromodification impacts resulting from urbanization, this Order requires Permittees to develop a Watershed Action Plan that integrates, to the extent practicable, water quality, stream protection, storm water management and re-use strategies with land use planning policies, ordinances, and plans within each jurisdiction. These plans should address cumulative impacts of development on vulnerable streams, preserve or restore, consistent with the maximum extent practicable standard, the structure and function of streams, and protect surface and groundwater quality. The Order specifies that the Watershed Action Plan include

<sup>33</sup> National Research Council Report (2008), [http://www.nap.edu/catalog.php?record\\_id=12465](http://www.nap.edu/catalog.php?record_id=12465)



strategies for addressing (303(d) listed waterbodies with adopted TMDLs with or without implementation plans as well as those impaired water bodies without a TMDL. The Permittees are also required to participate in TMDL development and implementation.

## **9. PUBLIC AND BUSINESS EDUCATION AND OUTREACH PROGRAMS**

Federal regulation, 40 CFR 122.26(d)(iv), requires the Permittees to develop a comprehensive storm water management plan with public participation and 40 CFR 122.26(d)(iv)(B)(6) requires the Permittees to engage in outreach activities to facilitate the proper management of pollutants. Public outreach is an important element of the overall urban pollution prevention program. The Permittees have implemented a strategic and comprehensive public education program to preserve and enhance the quality of receiving waters. The Principal Permittee has taken the lead role in the outreach programs and has targeted various groups including businesses, industry, commercial enterprises, developers, utilities, environmental groups, institutions, homeowners, school children, and the general public. The Permittees have developed a number of educational materials, have established a storm water pollution prevention hotline and website, started an advertising and educational campaign, and distribute public education materials at a number of public events. The Permittees are required to continue these efforts and to expand their public participation and education programs by participating in joint outreach programs with other agencies including, but not limited to, the SWQSTF, Caltrans, and other municipal storm water programs.

This Order also requires the Permittees to develop and distribute fact sheets/BMPs to address sources from residential sources such as: (1) auto washing and maintenance activities; (2) use and disposal of pesticides, herbicides, fertilizers and household cleaners; and (3) collection and disposal of pet wastes.

The Permittees are required to review their public education and outreach efforts and revise these activities, if necessary, to address public outreach needs.

Federal regulation, 40 CFR 122.26(d)(v), requires the Permittees to conduct a program assessment to determine the reduction in pollutant loadings due to urban storm water runoff management programs. Each Permittee is required to implement an assessment program, guided by the CASQA Program Effectiveness Guidance manual or equivalent alternative.

## **10. MUNICIPAL FACILITIES AND ACTIVITIES**

Federal regulation, 40 CFR 122.26(d)(iv)(A), requires the Permittees to ensure that public agency activities and facilities do not cause or contribute to violations of water quality standards in receiving waters. The third term permit incorporated performance commitments in the ROWD to prevent public agency facilities and activities from causing or contributing to a pollution or nuisance in receiving waters. The Permittees were also required to develop and distribute BMP fact sheets for various public agency activities. The third term permit also specified minimum requirements for street sweeping and inspection and maintenance of



drainage facilities. Permittee as well as contract staff that perform public agency activities were required to be properly trained.

Program evaluations conducted during the third-term permit indicated varying degrees of compliance at public agency facilities and activities. This Order requires each Permittee to inventory and inspect its fixed facilities, field operations and drainage facilities to ensure that public agency facilities do not cause or contribute to a pollution or nuisance in receiving waters.

Fixed public facilities and field operations include, but are not limited to, public streets and roads, parking facilities, fire training facilities, flood management and conveyance systems, POTWs, solid waste transfer facilities, land application sites, corporate yards, maintenance and storage yards, household hazardous waste collection facilities, municipal airfields, recreational facilities, and special event or festival venues. The Permittees are required to include in their local implementation plan procedures and schedules for inspections and maintenance of public agency facilities and activities.

## **11. MUNICIPAL CONSTRUCTION PROJECTS**

The third-term permit authorized the discharge of storm water from construction activities on one acre or more that are under ownership or direct responsibility of the Permittees. The Permittees were required to notify the Executive Officer prior to commencement of construction activities, and to comply with the substantive requirements of the latest Statewide General Construction Activities Storm Water Permit.

Program evaluations conducted during the third term permit indicated that some of the Permittees were not submitting or were not aware of the requirement to submit a Notice of Construction or Permit Registration Documents (PRDs) and a Notice of Completion for municipal construction projects.

This Order continues the requirement of the third term permit and builds upon it by requiring Permittees to include post-construction BMP information for municipal projects along with the Notice of Termination submitted to the Executive Officer upon completion of the construction activity. The Notice of Termination must include photographs of the completed project, a location map, structural post-construction BMP location, field verification report and long term operation and maintenance responsibility. The Permittees are required to develop a database of post-construction BMPs for which the Permittees are responsible and shall reference this database in the local implementation plans.

Emergency public work projects required to protect public health and safety are exempted from these requirements, until the emergency ends, at which time they need to comply with the requirements.

## **12. TRAINING PROGRAM FOR STORM WATER MANAGERS, PLANNERS, INSPECTORS, AND MUNICIPAL CONTRACTORS**

Education of municipal planning, inspection, and maintenance staff is critical to ensure that land use decisions, local permit approvals and municipal facilities and activities do not cause or contribute to an exceedance of receiving water quality standards. During the third term permit, the Permittees developed a web-based training program to provide better access to specific training elements. The Municipal Activities Pollution Prevention Strategy (MAPPS) online-training program addressed BMPs for public agency facilities and activities.

This Order requires the Permittees to define the necessary expertise and competencies for various job functions involved in the implementation of the areawide and local storm water programs and to develop an appropriate curriculum. The Permittees are required to conduct the training program for field operations and municipal inspection staff, for storm water managers, and for those involved in the review and approval of WQMPs and CEQA documents. The training curriculum should address the need for interdepartmental collaboration and communication to address issues related to storm water pollution controls.

## **13. MONITORING AND REPORTING REQUIREMENTS**

Prior monitoring programs conducted by the Permittees consisted of drainage area characterization, BMP evaluation, storm water, and receiving water monitoring. These early programs focused on identifying pollutants, estimating pollutant loads, tracking compliance with water quality objectives, and identifying sources of pollutants. The San Bernardino County monitoring program, as well as other monitoring programs nationwide, has shown that there is a high degree of uncertainty in the quality of storm water runoff and that there are significant variations in the quality of urban runoff spatially and temporally. However, most of the monitoring programs to date have indicated that there are a number of pollutants in urban storm water runoff. A definite link between pollutants in urban runoff and beneficial use impairments has been established at least in a few studies.

To date, wet weather monitoring has shown elevated pollutant concentrations at monitoring Sites 2, 3 and 5. Monitoring Site 2 is located 400 feet south of Freeway 60, west of Archibald Avenue, on the east side of Cucamonga Creek Channel, in the City of Ontario. Land use within this drainage area is primarily commercial and industrial. Site No. 3 is located at Hellman Avenue, between Pine Avenue/Schleisman Road and Chino-Corona Road/Chandler Street, 75 feet east of Hellman Avenue bridge on the south side of Cucamonga Creek Channel near the City of Chino on the San Bernardino County/Riverside County line. This site is mainly agricultural. Site No. 5 is located in the Hunts Lane access road north of Hospitality Lane, within a manhole located in the asphalt parking lot behind a group of commercial facilities in the City of San Bernardino. This site

receives flows from predominantly restaurants and other businesses in the area. Using wet weather monitoring data from 1994-99, the 2000 ROWD identified Site 5 to have the highest average concentration for BOD, copper, zinc, and TSS while Site 3 has the highest average concentrations for nitrate and phosphorus. First flush data from the 1999-2000 monitoring events showed elevated levels consistent with prior years' data for Sites 2, 3, and 5. During the third term permit, a Pollutant Source Investigation and Control Plan<sup>34</sup> was developed and implemented to investigate elevated pollutant concentrations of coliform bacteria, zinc, copper and lead at Site 5. This Order requires continued implementation of the plan, including annual reporting and BMP effectiveness evaluation for the Site 5 drainage area. This Order also requires the Permittees to continue first flush monitoring at storm drain monitoring Sites 2, and 3 to refine source identification and control techniques. Some of these efforts may be blended into the Watershed Action Plan that is required under the proposed Order.

The Order also requires the Permittees to participate in monitoring programs to support TMDL development and implementation. The Permittees are also participating in several other monitoring-related activities, including Comparative Evaluation of Microbial Source Tracking Techniques, Model Monitoring Program Guidance, Peak Flow Study, and Laboratory Inter-Calibration. Under the auspices of the Storm Water Monitoring Coalition, Southern California Coastal Water Research Project prepared "Model Monitoring Program for Municipal Separate Storm Sewer Systems in Southern California", August 2004 Technical Report No. 419. This report noted, "the lack of mass emissions stations in the inland counties hampers their ability to estimate the proportional contribution of these inland areas to cumulative loads downstream." The coalition consists of representatives from the Counties of Ventura, Los Angeles, Long Beach, Orange, San Bernardino, Riverside, and San Diego. An integrated Watershed Monitoring Plan should address any shortcomings in the overall monitoring programs and avoid duplicative efforts within the same watershed.

This Order requires the Permittees to continue their participation in these watershed coordination efforts. The third-term permit required the Permittees to initiate bioassessment monitoring. To allow for a holistic approach, this Order requires the Permittees to participate in the Regional Integrated Freshwater Bioassessment Monitoring Program in lieu of a separate bioassessment monitoring program for the permitted area.

This Order requires the Permittees to re-evaluate their Water Quality Monitoring Plan and submit a revised plan for approval. The revised integrated watershed monitoring program should integrate the goals and objectives of the Watershed Action Plan and rectify data gaps from previous monitoring efforts.

## **X. WATER QUALITY BENEFITS/COST ANALYSIS/FISCAL ANALYSIS**

There are direct and indirect benefits from clean beaches, clean water, and clean environment. It is difficult to assign a dollar value to the benefits the public derives from

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<sup>34</sup> 2005-2006, 2006-2007, 2007-2008 Annual Reports

fishable and swimmable waters. In 1972, at the start of the NPDES program, only 1/3 of the U.S. waters were swimmable and fishable. In 2008, more than 2/3 of the U.S. waters meet these criteria. In the November 1999 *"Money"* magazine survey of the "Best Places to Live," clean water and air ranked as two of the most important factors in choosing a place to live. Thus, environmental quality has a definite link to property values. Clean lakes and beaches and other water recreational facilities also attract tourists.

The true magnitude of the urban runoff problem is still elusive and any cost estimate for cleaning-up urban runoff would be premature short of end-of-pipe treatments. For urban storm water runoff, end-of-pipe treatments are cost prohibitive and are not generally considered as a technologically feasible option. Over the last decade, the Permittees have attempted to define the problem and implemented best management practices to combat the problem. The costs incurred by the Permittees in implementing these programs and policies are included in the annual reports.

The area-wide program is funded by the Permittees. The Principal Permittee prepares an annual budget for the Management Committee. The Principal Permittee allocates 95 percent of the approved budget costs to the co-permittees based on percentage calculated using the cost allocation formula defined in the Implementation Agreement.

The costs incurred by the Permittees in implementing these programs and policies can be divided into two broad categories (the costs indicated below are for the entire San Bernardino County storm water program):

1. Shared costs: These are costs that fund activities performed mostly by the Principal Permittee under the Implementation Agreement. These activities include overall storm water program coordination; intergovernmental agreements; representation at the California Storm Water Quality Association, Regional Board/State Board meetings and other public forums; preparation and submittal of compliance reports and other reports required under the NPDES permits and Water Code Section 13267, budget and other program documentation; coordination of consultant studies, co-permittee meetings; training seminars, water quality monitoring, and Countywide public education and outreach. Actual area-wide storm water program expenditures have increased from \$571,000 for FY 1995-96 (2<sup>nd</sup> term) to \$1,593,000 in FY 2006-07 (3<sup>rd</sup> term). During the third-term permit there has been an increase of about 15%/year from 2002-2007 in these program expenses. The Storm Water Program had allocated a budget of \$1,735,500 for FY 2007-08 and proposed a budget of \$1,765,500 for FY 2008-2009<sup>35</sup>. Below is a breakdown of the expenditure items and the corresponding percentage weight in the total budget.

The permittees identified the following budget for Fiscal Year (2008-2009):

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<sup>35</sup> San Bernardino County Storm water Program, Annual Report for Reporting Year (Fiscal Year) July 2007-June 2008, Nov 2008.

EXPENDITURE ITEMS	AMOUNT (\$)	PERCENTAGE
Public Education Program	300,000	18.69
Big Bear Lake TMDL	250,000	15.58
Administration	170,000	10.59
Chino Basin TMDL Implementation (Middle Santa Ana River)	160,000	9.97
MS4 Database Development	150,000	9.35
Storm Water Quality Standards Study (SAWPA)-Phase 3	150,000	9.35
Monitoring Program	100,000	6.23
Training	100,000	6.23
Participation in Regional Monitoring Program (SCCWRP)	70,000	4.36
Annual Report Preparation	50,000	3.12
Consultant Costs	30,000	1.87
Participation in Statewide Storm Water Issues (CASQA)	30,000	1.87
HCOC Map and Documentation	25,000	1.56
Permit Renewal Tasks	20,000	1.25
<b>Subtotal</b>	<b>1,605,000</b>	
Approved Reserved Fund (2008-09)	160,500	
<b>Total Budget</b>	<b>1,765,500</b>	

- Individual Costs for ROWD/MSWMP Implementation for the third term permit: These are costs incurred by each Permittee for implementing programs that complement the NPDES program by reducing the potential for pollutants to enter the storm drain system. Most of these programs existed prior to the MS4 program and these include: (1) street sweeping; (2) hazardous waste collection and recycling; and (3) storm drain and other municipal facilities maintenance. The MSWMP required additional programs and policies to ensure that these activities were not a significant contributor of pollutants to the MS4s and the receiving waters. In 2006/07, the Permittees determined their total Individual Costs for these programs to be \$60.138 million.

Funding sources for the Storm Water Program for individual permittees are General Funds, capital funds, storm drain fees, sewer funds, storm water management fees, development fees, licensing fees, plan check fees, NPDES construction inspection fees, business license fees, gas tax, utility tax, solid waste funds, and others.

## **XI. ANTIDegradation Analysis**

The Regional Board has considered whether a complete antidegradation analysis, pursuant to 40 CFR 131.12 and State Board Resolution No. 68-16, is required for the storm water discharges. The Regional Board finds that the pollutant loading rates to the receiving waters will be reduced with the implementation of the requirements in this Order. As a result, the quality of storm water discharges and receiving waters will be improved, thereby improving protection for the beneficial uses of waters of the United States. Since this Order will not result in a lowering of water quality, a complete antidegradation analysis is not necessary, consistent with the federal and state antidegradation requirements.

## **XII. PUBLIC WORKSHOPS**

The Regional Board conducted a public workshop on the first draft of the Order on August 3, 2009 at the Loma Linda City Council Chambers.

## **XIII. PUBLIC HEARING**

The Regional Board will hold a public hearing (scheduled to start at 9:00 a.m.) regarding the proposed waste discharge requirements on January 29, 2010 at the City Council Chambers, City of Loma Linda, 25541 Barton Road, Loma Linda, CA. A Notice of Public Hearing was published in the Legal Notices section of The Sun, a local newspaper, on November 13, 2009. Further information regarding the conduct and nature of the public hearing concerning these waste discharge requirements may be obtained by writing or visiting the Santa Ana Regional Board office, 3737 Main Street, Suite 500, Riverside, CA 92501-3339. This and other information are also available at the website at: [www.waterboards.ca.gov/santaana](http://www.waterboards.ca.gov/santaana). A Notice of Public Hearing and Hearing Procedure is also [posted](#) on the Regional Board's website at:

[http://www.waterboards.ca.gov/santaana/water\\_issues/programs/stormwater/san\\_bernardino\\_permit.shtml](http://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/san_bernardino_permit.shtml)

## **XIV. INFORMATION AND COPYING**

Persons wishing further information may write to the above address or call Maria Macario at (951) 321-4583 or email at [mmacario@waterboards.ca.gov](mailto:mmacario@waterboards.ca.gov). Copies of the application, proposed waste discharge requirements, and other documents (other than those which the Executive Officer maintains as confidential) are available at the Regional Board office for inspection and copying by appointment scheduled between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday (excluding holidays).

## **XV. REGISTER OF INTERESTED PERSONS**

Any person interested in a particular application or group of applications may leave his/her name, address, and phone number as part of the file for an application. Copies of tentative waste discharge requirements will be emailed to all interested parties.

E-mail registration:

[http://www.waterboards.ca.gov/resources/email\\_subscriptions/reg8\\_subscribe.shtml](http://www.waterboards.ca.gov/resources/email_subscriptions/reg8_subscribe.shtml)



In addition to the permittees, comments were solicited from the following agencies and/or persons:

Government Agencies

U. S. Environmental Protection Agency – John Kemmerer/Eugene Bromley (W-5-1)  
US Army District, Los Angeles, Corps of Engineers - Permits Section  
NOAA, National Marine Fisheries Service  
US Fish and Wildlife Service – Carlsbad  
U.S. Department of Agriculture - Forest Services, San Bernardino County National Forest  
California Department of Transportation (Cal Trans), District 8, Paul Lambert  
California Department of Parks and Recreation - Chino Hills State Park  
Inland Valley Development Agency, San Bernardino International Trade Center and Airport  
State Water Resources Control Board – David Rice, Office of the Chief Counsel  
State Water Resources Control Board – Bruce Fujimoto, Division of Water Quality  
State Department of Water Resources - Glendale  
California Regional Water Quality Control Board, North Coast Region (1) – Executive Officer  
California Regional Water Quality Control Board, San Francisco Bay Region (2) - Executive Officer  
California Regional Water Quality Control Board, Central Coast Region (3) - Executive Officer  
California Regional Water Quality Control Board, Los Angeles Region (4) - Executive Officer  
California Regional Water Quality Control Board, Central Valley Region (5S) - Executive Officer  
California Regional Water Quality Control Board, Central Valley Region (5R) – Assistant Executive Officer  
California Regional Water Quality Control Board, Central Valley Region (5F) – Assistant Executive Officer  
California Regional Water Quality Control Board, Lahontan Region (6SLT) - Executive Officer  
California Regional Water Quality Control Board, Lahontan Region (6V) – Assistant Executive Officer  
California Regional Water Quality Control Board, Colorado River Basin Region (7) - Executive Officer  
California Regional Water Quality Control Board, San Diego Region (9) - Executive Officer  
California Department of Fish and Game - Ontario  
California Department of Public Health – San Bernardino  
California Department of Parks and Recreation - Perris  
South Coast Air Quality Management District - Diamond Bar  
Riverside County Flood Control District – Jason Uhley  
Orange County Public Works Department - Chris Crompton/Richard Boone

Interested Parties

AEI/CASC – Jeff Endicott  
URS/Greiner - Bob Collacott  
Building Industry Association –Mark Grey  
Latham & Watkins – Paul Singarella/Shirin Zandipour  
Best, Best, and Krieger  
Southern California Association of Governments (SCAG), Los Angeles  
San Bernardino Associated Governments (SANBAG)  
Santa Ana Watershed Project Authority - Celeste Cantu  
Inland Empire West Resource Conservation District - General Manager

Universities and Colleges (Chancellor)

California State University - California State University San Bernardino  
San Bernardino Community College District - Chaffey College Campus  
San Bernardino Community College District - Crafton Hills College Campus  
San Bernardino Community College District - San Bernardino Valley College  
Campus  
University of Redlands  
Loma Linda University

School Districts (Superintendent)

Alta Loma Elementary School District  
Bear Valley Unified School District  
Central Elementary School District  
Chaffey Joint Union High School District  
Chino Valley Unified School District  
Colton Joint Unified School District  
Cucamonga Elementary School District  
Etiwanda Elementary School District  
Fontana Unified School District  
Mountain View Elementary School District  
Mt. Baldy joint Elementary School District  
Ontario-Montclair Elementary School District  
Rialto Unified School District  
Rim of the World Unified School District  
Redlands Unified School District  
San Bernardino City Unified School District  
Upland Unified School District  
Yucaipa Joint Unified School District

Hospitals (Administrator)

Bear Valley Community Hospital  
Chino Community Hospital  
Doctors Hospital  
Kaiser Foundation Hospital  
Loma Linda Community Hospital  
Loma Linda University Medical Center

Mountains Community Hospital  
Ontario Community Hospital  
Patton State Hospital  
Redlands Community Hospital  
St. Bernardine Medical Center  
San Antonio Community Hospital  
San Bernardino Community Hospital  
San Bernardino County Hospital

#### Environmental Organizations

Lawyers for Clean Water – Daniel Cooper  
Orange County Coastkeeper – Garry Brown  
Inland Empire Waterkeeper - Autumn DeWoody  
Defend the Bay – Bob Caustin  
Sierra Club, San Geronio Chapter  
Natural Resources Defense Council (NRDC) – David Beckman/Bart Lounsbury  
Cousteau Society  
Audubon Sea & Sage Chapter

#### Newspapers

Press Enterprise  
Inland Valley Daily Bulletin  
Big Bear Grizzly  
Chino-Chino Hills Champion Newspapers  
Fontana Herald News  
Highland Community News  
Redlands Daily Facts  
San Bernardino Sun  
Los Angeles Times  
Orange County Register

#### Railroads

AT&SF Railway Company  
Southern Pacific Railroad Company

#### Water Districts (General Manager)

Big Bear Municipal Water District  
Inland Empire Utilities Agency  
Cucamonga [Val](#)~~County~~ Water District  
East Valley Water District  
Monte Vista Water District  
San Bernardino Valley Municipal Water District  
West San Bernardino County Water District  
Yucaipa Valley Water District Orange County Water District  
Metropolitan Water District  
Western Municipal Water District  
Orange County Water District